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STATE OF CALIFORNIA
HIGHWAY TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS



DEFLECTION STUDY OF
VARIOUS ROADS IN VENTURA COUNTY

66-457

June 1966



State of California
Department of Public Works
Division of Highways
Materials and Research Department
June 24, 1966

Lab. Auth. 33277

Mr. M. C. Lorenz
Director of Public Works
County of Ventura
Courthouse
Ventura, California 93001

Attention Mr. V. G. Stevens
Operations Engineer

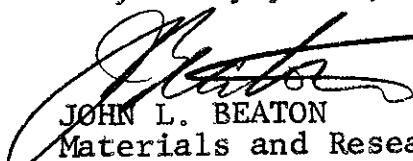
Dear Sir:

Submitted for your consideration is:

REPORT
ON
DEFLECTION STUDY
OF
VARIOUS ROADS IN
VENTURA COUNTY

Study made by Pavement Section
Under direction of E. Zube
Project supervisor R. A. Forsyth
Report prepared by J. B. Hannon

Very truly yours,


JOHN L. BEATON
Materials and Research Engineer

Attach

cc: L. R. Gillis
C. T. Ledden
A. C. Birnie
A. A. Smith
M. L. Bauders

INTRODUCTION

Presented herein are the results of a deflection survey of various roads in Ventura County. This study was requested by Mr. M. C. Lorenz, Director Public Works for Ventura County, in a letter to Mr. Edward T. Telford, District Engineer, (District 07), Attention Mr. John L. Beaton, dated February 21, 1966.

From April 7 to 13, 1966, deflection measurements were obtained with the traveling deflectometer carrying a 15,000 pound axle load on the following 58.49 miles of county roads:

<u>Road</u>	<u>Limits</u>	<u>Length (Miles)</u>
A. Rolling Oaks Drive	State Hwy. Rte. 101 to Sundown Road	0.63
B. Calle Yucca	Calle Corta to State Hwy. Rte. 101	0.88
C. Arneill Road	State Hwy. Rte. 101 to Las Posas Rd.	1.38
D. Las Posas Road	State Hwy. Rte. 101 to State Hwy. Rte. 34	4.14
E. Central Avenue	Vineyard Ave. to State Hwy. Rte. 101	3.74
F. Santa Clara Avenue	State Hwy. Rte. 101 to State Hwy. Rte. 118	2.82
G. Rice Avenue	State Hwy. Rte. 101 to State Hwy. Rte. 1	3.72
H. South Mountain Road	Willard Bridge to Bellevue Avenue	6.15
I. Guiberson Road	State Hwy. Rte. 23 to Torrey Rd.	6.79
J. Piru Canyon Road	Center St., north to end	7.45
K. Cochran Street	Rebecca St. to Stow St.	1.99
L. Erringer Road	Alamo St. to 100'S of Hamilton St.	2.08
M. Bradley Road	State Hwy. Rte. 118 to Balcom Canyon Rd.	4.56

N. Stockton Road	Balcom Canyon Rd. to Broadway Rd.	4.39
O. Broadway Road	Stockton Rd. to State Hwy. Rte. 23	1.11
P. Santa Ana Road	Casitas Pass Rd. to State Hwy. Rte. 150	5.69
Q. El Roblar Drive	State Hwy. Rte. 33 to Rice Road	0.97

These facilities appeared to be a representative cross section of the Ventura County road system. All roads are two lane and have structural sections consisting of varying thicknesses of asphaltic concrete or road-mixed surfacing over either oiled earth, native soil or an untreated aggregate base. Curbs and gutters are present on portions of roads C, D, K, L and Q.

Visual examination revealed that the surfacing on most roads was in fair to good condition with varying degrees of distress. Several, however, showed signs of instability in the form of rutting.

A tabulation of deflection measurements and visual observations for each test section is presented by Table I.

RECOMMENDATIONS

The reconstruction recommended for the various roads would be considered adequate to restore a comparable State facility to a condition sufficient to render service-free maintenance for an extended period of time under a given traffic volume. In arriving at the proposed corrective treatment, consideration was given to visual appearance, Traffic Index, and continuity of structural section as well as level of transient deflection.

For the roads in question, the 80 percentile deflection levels fell into two general groupings. For the lower group, (0.011" to 0.059"), either a double screening seal coat or a thin open or dense graded asphaltic concrete blanket is possibly the most practical and economical method of relieving pavement distress and improving roadway appearance. The seal coat treatment is recommended for sealing and obscuring existing distress, whereas the thin open graded asphaltic concrete blanket repair is recommended for restoring riding quality or preventing reflection type cracking. Where thin blankets are recommended, however, isolated areas of severe distress should be subject to local

digout repair. This should consist of scarifying and removing existing material in these areas to a depth of 0.67' and replacing it with 0.50' of Class 2 aggregate base and 0.17' of dense graded asphaltic concrete.

For those roads with evaluated deflection levels in excess of 0.059" a more extensive corrective treatment is indicated. Where curbs and gutters do not impose vertical controls, corrective treatment should consist of overlaying the existing surfacing with a variable thickness of Class 2 aggregate base and surfacing with 0.17' or 0.25' of asphaltic concrete. The aggregate base should be "daylighted" through the entire structural section in order to prevent an unsatisfactory drainage condition. On roadways where cracking is continuous and has progressed to the point where the existing surfacing can be expected to act independently of any blanket, i.e., as an aggregate base rather than an integral part of the new surfacing, the placement of an asphaltic concrete contact blanket becomes practical since significant reductions in deflection can be effected without accompanying loss of flexibility.

The aforementioned recommendations provide for full utilization of the residual strength of the existing roadway. This type of repair is without exception the most economical since it has been our experience that even a badly cracked pavement retains a good deal of residual strength which should be incorporated into the reconstruction if possible. Where vertical controls exist and deflection levels indicate the need for a major repair, a digout is necessary. For this investigation a digout repair was found to be necessary on only a portion of one roadway. Here, it was considered desirable to maintain flexibility and thus a higher tolerable deflection by replacing the existing material with aggregate base, subbase and asphaltic concrete surfacing.

The following are specific recommendations for the various roads subject to this deflection study:

A. Rolling Oaks Drive
From State Highway Route 101 to Sundown Road.
(Test Section A-1). Overlay existing surfacing with 0.67' of Class 2 aggregate base and 0.17' asphaltic concrete.

B. Calle Yucca
From Calle Corta to State Highway Route 101.
(Test Section B-1 and B-2). Place 0.17' asphaltic concrete blanket. Prior to this treatment, the areas of severe distress should be subject to a local digout repair. This would consist of scarifying and removing the existing material in this area to a depth of 0.67'. This would be followed by the placement of 0.67' of Class 2 aggregate base to conform with original grade, followed by the 0.17' asphaltic concrete blanket.

C. Arneill Road

From Las Posas Road to Ponderosa Street.
(Test Section C-1 and C-2). No corrective treatment.

From Ponderosa Street to State Highway Route 101
(Test Section C-3). No corrective treatment.

D. Las Posas Road

From State Highway Route 101 to State Highway Route 34.
(Test Sections D-1 to D-6). Place a 0.05' open graded asphaltic concrete blanket.

E. Central Avenue

From Vineyard Avenue to Santa Clara Avenue.
(Test Section E-1). Place double screening seal coat.

From Santa Clara Avenue to State Highway Route 101.
(Test Sections E-2 and E-3). Overlay existing surfacing with 0.17' asphaltic concrete.

F. Santa Clara Avenue.

From State Highway Route 101 to State Highway Route 118. (Test Sections F-1 to F-3). Place 0.17' asphaltic concrete blanket.

G. Rice Avenue

From State Highway Route 101 to Pleasant Valley Road.
(Test Sections G-1 to G-3). Place 0.25' asphaltic concrete blanket.

H. South Mountain Road

From Willard Bridge to 4.7 miles east.
(Test Section H-1 and H-2). Place an 0.08' dense graded asphaltic concrete blanket.

From 4.7 miles east of Willard Bridge to Bellevue Avenue. (Test Sections H-3 to H-5). No corrective treatment.

I. Guiberson Road.

From State Highway Route 23 to 4.15 miles east.
(Test Section I-1 to I-3). Place an 0.08' dense graded asphaltic concrete blanket.

From 4.15 miles east of State Highway Route 23 to Torrey Road (Test Section I-4). Place 0.17' asphaltic concrete blanket.

J. Piru Canyon Road

From Center Street to 6.0 miles north.
(Test Sections J-1 to J-3). Place a 0.05' open graded asphaltic concrete blanket.

From 6.0 miles north of Center Street, north to end of pavement. (Test Sections J-4 and J-5). Place 0.17' asphaltic concrete blanket.

K. Cochran Street

From Rebecca Street to Tapo Street.
(Test Section K-1). Place an 0.08' dense graded asphaltic concrete blanket.

From Tapo Street to Stearns Street.
(Test Section K-2). No corrective treatment.

From Stearns Street to Stow Street.

(Test Section K-3). Place either a 0.05' open graded asphaltic concrete blanket or a double screening seal coat.

L. Erringer Road

From Alamo Street to State Highway Route 118.
(Test Section L-1). Overlay the existing surfacing with 0.33' of Class 2 aggregate base and 0.20' asphaltic concrete.

From State Highway Route 118 to Arcane Street.

(Test Sections L-2 to L-4). Place a 0.17' asphaltic concrete blanket.

From Arcane Street to 100' south of Hamilton Street.

(Test Section L-5). Place either a 0.05' open graded asphaltic concrete blanket or a double screening seal coat.

M. Bradley Road

From State Highway Route 118 to Berylwood Road.
(Test Section M-1). Place 0.17' asphaltic concrete blanket.

From Berylwood Road to 2.25 miles north of State Highway Route 118 (Test Section M-2). Overlay existing surfacing with 0.33' of Class 2 aggregate base and 0.21' asphaltic concrete.

From 2.25 miles north of State Highway Route 118 to Balcom Canyon Road. (Test Section M-3). Place 0.17' asphaltic concrete blanket.

N. Stockton Road

From Balcom Canyon Road to 1.35 miles east.
(Test Section N-1). Place 0.17' asphaltic concrete blanket.

From 1.35 miles east of Balcom Canyon Road to Broadway Road. (Test Sections N-2 and N-3). Overlay existing surfacing with 0.67' of Class 2 aggregate base and 0.17' asphaltic concrete.

O. Broadway Road

From Stockton Road to State Highway Route 23.
(Test Section O-1). No corrective treatment.

P. Santa Ana Road

From Casitas Pass Road to 1.0 miles north.
(Test Section P-1) No corrective treatment.

From 1.0 miles north of Casitas Pass Road to State Highway Route 150. (Test Sections P-2 to P-5). Place 0.17' asphaltic concrete blanket.

Q. El Roblar Drive

From State Highway Route 33 to Rice Road. (Test Sections Q-1 and Q-2). Place either a 0.05' asphaltic concrete blanket or a double screening seal coat.

The evaluated deflection levels for the section between State Highway Route 33 and Lomita Avenue are in excess of existing criteria for a 3-1/2" AC at a T. I. of 7.0 (0.025"). Because this facility is in relatively good condition with only isolated or intermittent cracking, full corrective treatment of the existing condition is not recommended at this time, particularly since the existence of curbs and gutters place some restriction on the method of corrective treatment. The application of the aforementioned surface treatment should seal off the surface and retard future distress. At the time when a major repair is anticipated for this facility, additional deflection measurements should be made since a continued application of traffic may significantly change the level of deflection and, thus, the degree of required reconstruction.

These recommendations are consistent with and derived from experience gained by past deflection studies.

ANALYSIS OF DATA

The criteria utilized for evaluation of pavement deflections originated as the result of a comprehensive deflection study which was made throughout the State. The results of this work suggested limits of the maximum tolerable deflection to preclude "fatigue" cracking during the design life of the pavement. These limits, which vary in accordance with the type of structural section, are as follows and were based on a Traffic Index of 9+:

Thickness	Type of Pavement	Maximum Deflection for Design Purposes (Tentative)
6 in.	Cement Treated Base (Surfaced with Bit. Pavement)	0.012"
4 in.	Asphalt Concrete on Gravel Base	0.017"
3 in.	Asphalt Concrete on Gravel Base	0.020"
2 in.	Asphalt Concrete on Gravel Base	0.025"

At the present time, limiting values are adjusted for low TI pavements, utilizing data obtained from asphalt fatigue studies made by this department.

The evaluated deflection level (Table I) is the 80 percentile value for each deflection measurement taken in a given section. This value is used as the basis for design since it reflects the deflection characteristics of the roadway as a whole rather than isolating possible causes of distress indicated by averages through cut, fill, cracked or uncracked sections.

The Traffic Index values used for design purposes in this study are shown in Table I. These values were obtained from the County of Ventura.

TABLE I
DEFLECTION TEST DATA

VENTURA COUNTY

Road and Test Section	Existing Structural Section	Deflection (Inches)			Appearance
		T.I.	I.W.I.	O.W.I.	
A- Rolling Oak Drive A-1) L-shaped headwall, 0.2 M.L. from Hwy. over native soil 101 to 350' S. (SBL)	1-1/2" AC	5.5	0.063"	0.035"	0.107" (25)** Rutting, small "alligator" cracking and intermittent patches.
B- Calle Yucca B-1) $\frac{1}{2}$ Morelia Court to 400' S. (SBL)	"	5.0	0.036"	0.052"	0.076" (28) Intermittent patches and some "alligator" cracking near the shoulders.
B-2) $\frac{1}{2}$ Calle Laredo to 400' S. (SBL)	"	"	0.032"	0.046"	0.061" (30) Same as above with some rutting.
C- Arneill Road C-1) $\frac{1}{2}$ Rocklyn St. to 500' S. (SBL)	"	7.0	0.017"	0.021"	0.025" (33) Good condition
C-2) $\frac{1}{2}$ Domigan St. to 400' S. on widened area. (SBL)	"	"	0.022"	0.022"	0.024" (28) " " " " " " " "
C-3) $\frac{1}{2}$ Berry St. to 400' S. (SBL)	"	"	0.023"	0.022"	0.034" (28)** Good condition with isolated patches.

TABLE I (continued)
DEFLECTION TEST DATA
VENTURA COUNTY

Road and Test Section	Existing Structural Section	Deflection (Inches)			Appearance
		T.I.	WT	OTI (80% lev'l)	
D- Las Posas Road D-1) 100' N. of Pickering St. to 700' N. (NBL)	1-1/2" RMS 5' x 2' native soil	7.6	0.017"	0.022"	0.029" (46) Random "map", transverse and small "alligator" cracking.
D-2) $\frac{1}{2}$ Calle La Cumbre To 500' E. (EBL)	"	"	0.020"	0.018"	0.023" (25) "
D-3) Episcopal Church sign on left to 300' E. on widened area (EBL)	"	"	0.019"	0.016"	0.021" (22) Good condition
D-4) $\frac{1}{2}$ Glenbrook St. to 550' E. (EBL)	"	"	0.019"	0.023"	0.026" (40) Intermittent "alligator" and "map" cracking in both lanes.
D-5) $\frac{1}{2}$ Temple Ave. to 700' E. (EBL)	"	"	0.016"	0.020"	0.025" (46) "Map" and transverse cracking in the OTI and a thin AC blanket covers the rest of the lane.
D-6) $\frac{1}{2}$ Antonio Ave. to 500' E. (EBL)	"	"	0.028"	0.030"	0.037" (37) Generally good condition with inter- mittent "map" and transverse cracking.

TABLE I (continued)
DEFLECTION TEST DATA

VENTURA COUNTY

Road and Test Section	Existing Structural Section	T.I.	Deflection (Inches)		Appearance
			Mean TWI	Evaluated O.W.T. (80% level)	
E- Central Avenue E-1) $\frac{1}{2}$ Rose Ave to 800' N. (NBL)	2" AC over native soil	8.0	0.017"	0.019"	Good condition with isolated cracking.
E-2) 0.1 Mi. S. of Santa Clara Ave. to 700' S. (SBL)	"	"	0.032"	0.057"	Intermittent small "alligator" cracking with patches.
E-3) Telephone Pole #11303 to 500'S. (SBL)	"	"	0.028"	0.37"	0.065" (36")
F- Santa Clara Avenue F-1) 0.05 Mi. N. of Hwy. 101 to 600' N. (NBL)	2" AC 6" AB	8.0	0.015"	0.025"	0.032" (42")
F-2) 1.75 Mi. N. of Hwy. 101 to 700' N. (NBL)	"	"	0.252"	0.031"	0.041" (43")
F-3) Culvert Marker #5048-0.35 to 650' N. (NBL)	"	"	0.014"	0.019"	0.021" (44")
					Generally good condition with isolated "alligator" cracking.

TABLE I (continued)
DEFLECTION TEST DATA

VENTURA COUNTY

Road and Test Section	Existing Structural Section	T.I.	Deflection (Inches)		Appearance
			IMI	Mean OWI	
G-1) Rice Avenue to Sturgis Rd. to 700' S. (SBL)	2" AC over oiled earth	7.0	0.049"	0.042"	0.059" (50)** Intermittent areas of small "alligator" cracking and patches. Some rutting and corrugations.
G-2) 0.15 Mi. N. of Pleasant Valley Rd. to 700' N. (NBL)	"	"	0.037"	0.046"	0.051 (49) Intermittent small "alligator" cracking and a few patched and spalled areas.
G-3) 300' N. of Wooley Rd. to 1050' N. of Wooley Rd. (NBL)	"	"	0.028"	0.040"	0.059" (52) "
H-1) South Mountain Road 100' E. of S. Mountain Lemon Dr. to 600' E. (EBL)	3" AC over native soil	5.5	0.011"	0.012"	0.020" (34) Random "map", longitudinal and isolated "alligator" cracking.
H-2) 1.2 Mi. E. of Willard Bridge to 400' E. (EBL)	"	"	0.008"	0.009"	0.011" (28) Isolated patches and "map" cracking.
H-3) 3.05 Mi. E. of Willard Bridge to 800' E. (EBL)	"	"	0.025"	0.022"	0.032" (54) Good condition.

TABLE I (continued)
DEFLECTION TEST DATA
VENTURA COUNTY

Road and Test Section	Existing Structural Section	T.I.	Deflection (Inches)			Appearance
			Mean OWT	Evaluated OWT (30% level)	Deflection (Inches)	
H-4) 4.8 Mi. E. of Millard Bridge to 400' E. (EBL)	3" AC over native soil	5.5	0.010"	0.013"	0.014" (28)***	Good condition
H-5) 5.55 Mi. E. of Millard Bridge to 500' E. (EBL)	"	"	0.017"	0.020"	0.021" (37)	"
I-1) Gibsonson Road 0.1 Mi. E. of Hwy. 23 to 700' E. (EBL)	3" AC over native soil	5.5	0.015"	0.020"	0.023" (50)	Good condition with isolated patches and small "alligator" cracking.
I-2) 1.5 Mi. E. of Hwy. 23 to 500' E. (EBL)	"	"	0.012"	0.015"	0.021" (33)	"
I-3) 100' E. of Telephone pole #385845 E. to 800' E. (EBL)	"	"	0.012"	0.022"	0.026" (50)	Good condition with isolated longitudinal cracking.
I-4) 4.95 Mi. E. of Hwy. 23 to 550' E. (EBL)	"	"	0.032"	0.042"	0.043" (38)	Good condition with isolated longitudinal and "alligator" cracking.
J-1) Piru Canyon Road 500' N. (NBL)	3" AC over ciled earth	5.5	0.029"	0.039"	0.052" (34)	Generally good condition with isolated patches.

TABLE I (continued)
DEFLECTION TEST DATA

VENTURA COUNTY

Road and Test Section	Existing Structural Section	Deflection (Inches)			Appearance	
		T.I.	TWT mean	EWT (80% level)		
J-2) 1.35 Mi. N. of Center St. to 600' N. (NBL)	3" AC over oiled earth	5.5	0.020"	0.032"	0.037" (35)**	Generally good condition with isolated "map" and intertent "map" and transverse cracking.
J-3) Culvert Marker #4033-3.75 to 400' N. (NBL)	"	"	0.013"	0.022"	0.024" (30)	Generally good condition with isolated distress.
J-4) Mile Marker 40.22 to 350' N. (NBL)	"	"	0.047"	0.051"	0.057" (24)	Intermittent longitudi- nal cracking in both wheel tracks.
J-5) 7.1 Mi. N. of Center St. to 150' N. (NBL)	"	"	0.025"	—	0.083" (3)	"Alligator" cracking in both wheel tracks and light rutting with congregations. Pavement deformed during deflection measurements.
K- Cochran Street K-1) 650' W. of Winifred 1-1/2" AC St. to Winifred St. over (EBL)	native soil	7.0	0.024"	0.024"	0.034" (47)	Generally good condition with isolated "map" and "alligator" cracking.
K-2) 1/2 Workman Ave. to 400' E. (widened area)	3" AC over native soil	"	0.030"	0.029"	0.045" (29)	Good condition
K-3) 600' W. of Stearns St. to 300' E. of Stearns St. (EBL)	"	"	0.017"	0.019"	0.025" (61)	Generally good condition with isolated small "alligator" cracking.

TABLE I (continued)
DEFLECTION TEST DATA

VENTURA COUNTY

Road and Test Section	Existing Structural Section	T.I.	Deflection (Inches)			Appearance
			INT	Mean	Evaluatex (80% level)	
L-Enginner Road L-1) <u>Bracket Cochran St.</u> 400'; each way	1" RMS over native soil (SBL)	7.0	0.022"	0.047"	0.073" (52)"**	Random transverse and longitudinal cracking near the shoulder.
L-2) <u>Patricia Ave.</u> to 500' S. (SBL)	" AC over native soil	7.0	0.032"	0.037"	0.041" (33)	Intermittent "co continuous "block" cracking with patches.
L-3) <u>Kearney Ave.</u> to 400' S. (SBL)	"	"	0.051"	0.037"	0.063" (29)	Intermittent "alligator" and "map" cracking in NBL. Patches in SBL.
L-4) <u>Kearney Ave.</u> to 400' S. (in widened area)	"	"	0.037"	0.022"	0.046" (32)	Generally good condition with isolated distress.
L-5) <u>Arcane St.</u> to 400' S. (SBL)	"	"	0.020"	0.030"	0.035" (28)	" "
M- Bradley Road M-1) <u>Bridge AZ13</u> to 800' N. (NBL)	2" AC over native soil	7.0	0.018"	0.048"	0.059" (56)	Good condition with isolated longitudinal cracking near the shoulder.
M-2) 1.95 mi. N. of Hwy. 118 to 700' N. (NBL)	"	"	0.039"	0.061"	0.070" (49)	Generally good condition with isolated fine longitudinal, "map" and small "alligator" cracking.

TABLE I (continued)
DEFLECTION TEST DATA

VENTURA COUNTY

Road and Test Section	Existing Structural Section	T I.	Deflection (Inches)		Appearance
			INT	OPT	
M-3) Culvert Marker #2020-4.25 to 700' N. (NBL)	1-2" RMS over native soil	7.0	0.024"	0.044"	0.053" (46)**
N- Stockton Road N-1) 0.05 Mi. E. of Balcom Canyon Rd. to 800' E. (EBL)	2" RMS over native soil	"	0.021"	0.034"	0.045" (56)
N-2) 1.55 Mi. E. of Balcom Canyon Rd. to 800' E. (EBL)	"	"	0.047"	0.058"	0.071" (55)
N-3) 2.70 Mi. E. of Balcom Canyon Rd. to 500' E. (EBL)	"	"	0.042"	0.064"	0.081" (39)
O- Broadway Road O-1) 1.1 Mi. edge of Bridge #213 to 800' E. (EBL)	2" AC over native soil.	7.0	0.015"	0.018"	0.026" (56)***
P- Santa Ana Road P-1) 0.3 Mi. N. of Casitas Pass Rd. to 500' N. (NBL)	1-1/2 RMS over native soil	7.0	0.020"	0.032"	0.039" (35)
P-2) 1.2 Mi. N. of Casitas Pass Rd. to 600' N. (NBL)	"	"	0.032"	0.041"	0.047" (37)

Generally good
condition with isolate
m-block and shrinkage
cracks (chip seal).

Continuous "map" and
"m-block" cracking reflecting
through chip seal.

Isolated spall.

Isolated to intermittent
patches and fine hair-line
"map", alligator and longitudinal cracks.

TABLE I (continued)
DEFLECTION TEST DATA
VENTURA COUNTY

Road and Test Section	Existing Structural Section	Deflection (Inches)			Appearance
		T.I.	T.W.F. Mean	Evaluated* OWF (80% Level)	
P-3) 2.65 Mi. N. of Casitas Pass Rd. to native soil 500' N. (NBL)	1-1/2" RMS	7.0	0.021"	0.029"	0.041" (34)**
P-4) 4.0 Mi. N. to Casitas Pass Rd. to 500' N. (NBL)	2" AC 6" AB	"	0.022"	0.034"	Good condition, with isolated longitudinal cracking.
P-5) 5.4 Mi. N. of Casitas Pass Rd. to 500' N. (NBL)	"	"	0.027"	0.044"	Intermittent "map" "alligator" and "block" cracking.
Q-1) 300' W. on Hwy 33 to 800' W. (NBL)	3-1/2" AC 6" AB	7.0	0.032"	0.041"	0.043" (35)
Q-2) 6 Atnaz Ave. to 500' W. (NBL)	"	"	0.020"	0.018"	0.028" (34)

* The deflection value at which 20% of the deflection measurements are higher and 80% are lower.

** Number of individual deflection measurements.